IID Scanning Head

Idaho National Engineering and Environmental Laboratory

Technical Demonstration Summary Sheet

RUSSIAN ISOTOPIC IDENTIFICATION DEVICE (IID)

THE NEED

The Idaho National Engineering and Environmental Laboratory (INEEL) has a need for a device that can remotely identify and characterize radioactive isotopes. The current method for acquiring this data includes manually retrieving samples of material from radioactive areas and sending the samples to a laboratory for analysis. This manual method requires extensive planning to allow worker entry into areas that are potentially hazardous and requires workers to handle radioactive material. Manual methods also create radioactive waste by contaminating tools and sample equipment and adding cost to each D&D characterization activity. As a result, workers have a need for a technology that will reduce worker exposure while allowing characterization data to be obtained.

THE TECHNOLOGY

The IID is unique because of its ability to remotely identify and characterize radioactive isotopes. It has the capability to remotely identify what isotopes are present by providing real time spectrometric analysis of radiation sources. The demonstration at the INEEL proved the IID's capabilities to identify the isotopes of Am-241, Cs-137, and Co-60. The IID was incorporated into and is an integral part of the Russian Gamma Locator Device that includes a Gamma Collimator, Closed Circuit TV, Laser Distance Meter, Pan/Tilt Unit, and a Computer System that communicates to the IID using Radio Frequency. A sealed onboard 12-volt battery is used to provide power to the IID thus allowing autonomous (non-tethered) operation of the system.

DEMONSTRATION

The IID was demonstrated in July of 2001 at the Idaho National Engineering and Environmental Laboratory (INEEL) as part of the INEEL Large-Scale Demonstration and Deployment Project (LSDDP). DOE's National Energy Technology Laboratory (NETL) D&D Focus Area funded this work. The IID was deployed into the facility using an INEEL robot that allowed maneuverability and access to radiological areas on two separate floors of the facility. Four areas of the facility were characterized during a two-day demonstration that included demobilization and decontamination of the equipment.

RESULTS

Two operators were required for operation of the IID, one for the IID operation and one for the robot control. The IID scanned 20 areas within the facility each requiring approximately 2 minutes. Each scan contained 16 data points that provided detailed isotopic information for each point. The results indicated three isotopes are present (cobalt, cesium and americium) in each of the four areas. The IID performed very well and provided valuable isotopic information in each of the radiological areas within TAN-616

CONTACTS

- Willettia Amos, Project Manager, U.S. Department of Energy, Idaho Operations Office, (208) 526-4097.
- Steve Bossart, U.S. Department of Energy, National Energy and Technology Laboratory, DDFA (304) 285-4643.
- Dick Meservey, Program Manager, Idaho National Engineering and Environmental Laboratory (INEEL) (208) 526-1834.
- Craig Conner, INEEL, Test Engineer, Environmental Remediation Technology (208) 526-3090.
- Nikolai Sidorkin, NIKIMT, Moscow, Russia, (7-095) 489-9095

BENEFITS

- Eliminates the need for manual sample retrieval.
- Reduces radiological exposure to workers.
- Reduces labor costs (fewer people are needed to obtain data).
- Eliminates waste (due to sample disposal requirements).
- Reduces time required for data analysis.
- Provides detailed scan of radiological areas in real time.

Isotopic Data